UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MASAO INOUE, MASAO OGAWA, and
HIROSHI NAKAMURA

Appeal 2007-3263
Application 08/987,380
Technology Center 1600

Decided: December 3, 2007

Before ERIC B. GRIMES, LORA M. GREEN, and NANCY J. LINCK
Administrative Patent Judges.

GREEN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal[1] under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-3, 5-7, 10, 11, and 13.[2] We have jurisdiction under 35 U.S.C. § 6(b).

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[1] This Appeal was heard on November 13, 2007.
[2] Claims 16-18 are also pending, but stand withdrawn from consideration as being drawn to a non-elected invention.

Claims 1 and 6 are representative of the claims on appeal, and read as follows:

1. A granular pesticidal composition coated with a thermosetting resin selected from the group consisting of a polyurethane resin and an epoxy resin, wherein when the thermosetting resin is a polyurethane resin, the granular pesticidal composition is obtainable by the method according to claim 6, and when the thermosetting resin is an epoxy resin, the granular pesticidal composition is obtainable by the method accord to any one of claims 16-18.

6. A method for manufacturing a granular pesticidal composition coated with a polyurethane resin, comprising the steps of (a) adding a mixture containing 0.05 to 1.5 parts by weight of (1) polyisocyanate having tri- or higher isocyanate groups and polyol, (2) polyisocyanate and polyol having tri- or higher hydroxy groups, or (3) polyisocyanate having tri- or higher isocyanate groups and polyol having tri- or higher hydroxy groups for preparing a thermosetting resin to 100 parts by weight of a pesticidal active ingredient-containing granule to be coated; and (b) repeating step (a).

The claims have been examined only to the extent that they are directed to a granular pesticidal composition coated with a polyurethane resin and a method for manufacturing a granular pesticidal composition coated with polyurethane resin (Br.[3] 4). Thus, we limit our consideration of the issues accordingly.

The Examiner relies upon the following references:

Kogler	US 4,772,490	Sept. 20, 1988
Tocker	WO 91/10362	July 25, 1991
Burger	WO 93/04017	Mar. 4, 1993
Burger	CA 2115998	July 29, 2003

We affirm.

[3] All references to the Brief (Br.) are to the "second Amended Appeal Brief," date stamped October 16, 2006.

DISCUSSION

Claims 1-3, 5-7, 10, 11, and 13 stand rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Tocker, Burger,[4] and Kogler. As Appellants do not argue claims 2, 3, 6, and 7 separately, they stand or fall with claim 1.

Tocker is cited for teaching a pesticidal granule coated with polyurethane (Answer 3). Tocker is also cited for teaching that the coating procedure may be carried out stepwise, and that monomers containing more isocyanate or hydroxyl groups may be used to increase the degree of cross-linking in the polyurethane coating to obtain slow release of the active component (*id.* at 3-4).

The Examiner acknowledges that "Tocker does not teach expressly the employment of the particular procedure herein for making the coating wherein the polyols and polyisocyanate are mixed before the application to the granules." (*Id.* at 4)

Burger is cited for teaching a procedure of mixing the polyol and polyisocyanate before application to an agrochemical granule (*id.*). The coating may be applied in multiple layers, is physically stable, is resistant to frost, and provides for sustained release of the active ingredients (*id.*).

Kogler is cited for teaching methods of coating granular agrochemicals with polyurethane for controlled release of the agrochemical, wherein the polyisocyanate and polyols are mixed before application to the granular agrochemical (*id.*).

The Examiner concludes:

[4] All references to Burger are to the English language version, *i.e.*, CA 2115998, published July 29, 2003.

> Therefore, it would have been prima facie obvious to a person of ordinary skill in the art, at the time the claimed the [sic] invention was made, to modify the pesticidal granules of Tocker by mixing the polyols and polyisocyanates first followed by coating the mixture to the granules.
>
> A person of ordinary skill in the art would have been motivated to make such modification because the modification will lead to a stable, controlled releasing coating.

(*Id.*)

The burden is on the Examiner to set forth a prima facie case of obviousness. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) secondary considerations of nonobviousness, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The Supreme Court has recently emphasized that "the [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 1739. Moreover, an "[e]xpress suggestion to substitute one equivalent for another need not be present to render such substitution obvious." *In re Fout*, 675 F.2d 297, 301 (CCPA 1982). We conclude that the Examiner has set forth a prima facie case of obviousness, and affirm the rejection.

Appellants argue that Tocker "is *not* combinable with either Burger or Kogler." (Br. 9.) Tocker, Appellants assert, teaches the use of interfacial polymerization, and "teaches that its interfacial polymerization is 'much more versatile and convenient' in that its polymerization reaction eliminates various obstacles previously found in interfacial polymerization." (*Id.* at 10.) Tocker, according to Appellants, "fails to teach or suggest that the polymerization thereof can occur at a different timeframe or location." (*Id.*) Appellants argue moreover that the

> Examiner's proposed combination would fundamentally change the invention described in Tocker, because the essence of Tocker's invention is in the interfacial polymerization method. As described above, Tocker boasts that its process is superior to previously known methods because of its convenient polymerization reaction. The modification to the extent proposed by the Examiner would eliminate the very polymerization reaction that makes the process thereof convenient.

(*Id.* at 11.)

Tocker teaches a polyurethane coated granular pesticidal composition. Admittedly, Tocker does not teach mixing the polyol and the polyisocyanate before application to the granules, but Burger and Kogler are cited by the Examiner to demonstrate that it is known in the art to coat agrochemicals with polyurethane to obtain sustained release of the active agent, wherein the polyol and the polyisocyanate are mixed before application to the granule. One of ordinary skill would have understood that the process of Kogler and Burger could be used to coat the pesticidal granular particles of Tocker, as such a combination would also produce a polyurethane coated pesticide that would allow for sustained release of the active ingredient. As noted by the

Court in *KSR*, a "person of ordinary skill is also a person of ordinary creativity, not an automaton." 127 S. Ct. at 1742. The arguments proffered by Appellants reflect an overly restrictive approach to the obviousness analysis and do not take into consideration the knowledge, skill, and creativity of the ordinary artisan.

At oral argument, Appellants urged that the rejection on review is Tocker as modified by Burger and Kogler. According to Appellants, if the rejection were to be restated as either Burger or Kogler as modified by Tocker, that would constitute a new ground of rejection, and is thus not before the panel on appeal.

We decline to take such a narrow view of the obviousness analysis. In *KSR*, the Court rejected a rigid application of the teaching-suggestion-motivation test. *KSR*, 127 S.Ct. at 1739. The Court recognized that it is often necessary to look at the interrelated teachings of multiple references; the effects of demands of the marketplace; and the background knowledge possessed by a person of ordinary skill, "all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed." *Id.* at 1740-41. Moreover, the "obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, or motivation, or by overemphasis on then importance of published articles and explicit content of issued patents." *Id.* at 1741.

Given that guidance, we do not think that the obviousness analysis can be limited to analyzing whether the secondary references can be used to modify the primary references. Rather, the question is whether the prior art, when read as a whole, renders the claimed invention obvious. For the reasons set forth above, we conclude that it does.

As to claims 5, 10, 11, and 13, Appellants argue that Tocker, Burger, and Kogler do not teach anything about water absorption ratio (Br. 12). According to Appellants, although the Examiner contends that one of ordinary skill in the art would expect the granules of Tocker to provide an identical water absorption ratio as Tocker teaches employing essentially the same polyols and polyisocyanates, the Specification shows that the water absorption ratios of the granular pesticidal composition 3 and 5 are 6.19% and 3.32%, respectively (*id.*). That result was obtained, Appellants assert, even though the raw materials of the polyurethane are the same (*id.* at 12-13).

Appellants' arguments are not convincing. Appellants' Table 2, upon which they rely, is reproduced below.

Table 2

	Number of days for 50% release (day)	OH equivalent	Tg (°C)	Water absorption ratio
Granular pesticidal composition (3)	3	485	-24	6.19
Granular pesticidal composition (4)	5	279	35	3.64
Granular pesticidal composition (5)	9	230	28	3.32
Granular pesticidal composition (6)	14	198	59	2.97
Granular pesticidal composition (7)	25	148	73	2.17

Shown in the Table are the polyol equivalent (OH equivalent) of the thermosetting resin used for coating, Tg (defined as "value read from peak of dissipation elasticity modulus obtained in viscoelasticity measurement"), and water absorption ratio (%) after being kept in boiling water for 24 hours (Specification 38). As noted by the Specification, the "extent of controlled release tends to increase when OH equivalent of a thermosetting resin becomes lower (water absorption ratio becomes lower), and therefore, controlled release of the pesticidal active ingredient corresponding to the

object can be conducted by appropriately changing the kind and amount of a thermosetting resin depending on use occasion." (*Id.*)

As the Table makes clear, the water absorption ratio is not just dependent on the polyisocyanate, but on the polyol. As the amount of polyol decreases, the water absorption ratio decreases, and the particle exhibits longer controlled release of the active ingredient. Both Burger and Kogler teach the use of a polyurethane resin to coat an agrochemical, wherein the polyurethane resin is made by premixing the polyol and polyisocyanate before application to the granulated agrochemical. In addition, as noted by the Examiner, both Kogler and Burger are drawn to controlled release particles, and Figure 3 of Burger demonstrates that one such particle did not release 50% of the active ingredient until approximately 9 weeks. Thus, one of ordinary skill in the art would have expected that a particle exhibiting such a controlled release profile would also have a water absorption ration of less than 5%. The rejection is thus also affirmed as to claims 5, 10, 11, and 13.

Appellants also rely on the Declaration of Masao Inoue, dated November 5, 2003 (Br. 13). The Declaration compares a composition prepared according to the claims (Composition (1)) and a composition prepared according to the teachings of Tocker (Composition (2)) (*id.*). According to Appellants:

> The experiment establishes that Composition (1) provides a controlled release of a pesticidally active ingredient, which is superior to that provided by Comparative Composition (2). The experiment shows that Comparative Composition (2) has a release ratio in which the initial amount of the pesticidal active ingredient was completely eluted within or up to 14 days. In stark contrast, the experiment shows that Composition (1),

> according to the present invention, was still providing for a controlled release of the pesticidal active ingredient past 14 days, and even after 42 days.

(*Id.* at 13-14). Appellants assert that "a person of ordinary skill would not expect the results illustrated in the Declaration." (*Id.* at 14.)

The burden of demonstrating unexpected results rests on the party asserting them, and "it is not enough to show that results are obtained which differ from those obtained in the prior art: that difference must be shown to be an *unexpected* difference." *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). Moreover, it has been long held that "even though applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art, unless the claimed ranges 'produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art." *In re Huang*, 100 F.3d 135, 139 (Fed. Cir. 1996) (quoting *In re Aller*, 220 F.2d 454, 456 (1955), and citing *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990)).

We find that one of ordinary skill in the art would not find the results set forth in the Declaration to be unexpected, and thus the Declaration is insufficient to rebut the prima facie case of obviousness.

Kogler teaches that:

> The rate at which the active ingredient is being released from the granular substance covered according to the method of the invention can be adjusted by varying the polyol and isocyanate components and the thickness of the covering and its polyurethane content, with the result that in the case of fertilizer granules for instance, *an effective period of from 1 month to 1 year can be achieved*.

(Kogler, col. 2, ll. 34-41 (emphasis added)). Thus, Kogler teaches that one of ordinary skill would not find it unexpected that granular particles would have a long effective period of controlled release of the active ingredient, when coated with a polyurethane coating produced by the method taught by Kogler. Similarly, Burger demonstrates that the rate of release of the active ingredient can be increased when the coating process taught by the reference, that is, mixing the polyisocyanate and the polyol, before application to the particles, is used (see Fig. 3).

Appellants argue that "the Examiner requires Applicants to provide a comparison of the claimed invention with a composition" as provided by the combination (Br. 15). Appellants assert that as stated in MPEP § 716.02(e)(III), "the claimed invention need merely be compared with the closest 'prior art,' rather than the resulting combination of the cited art." (*Id.*) Appellants ague that the "patentability standard required by the Examiner would provide the incorrect result that Applicants must compare their claimed invention with the invention itself." (*Id.*)

Appellants' argument is not convincing. We agree that the proper comparison is to the closest prior art, but, as discussed above, the Declaration also has to demonstrate that any such showing would be unexpected to the ordinary artisan. But, as discussed above, one of ordinary skill would not find the results provided in the Declaration to be unexpected.

CONCLUSION

Because we conclude that the Examiner has set forth a prima facie case of obviousness that has not been adequately rebutted by Appellants, the rejection of claims 1-3, 5-7, 10, 11, and 13 under 35 U.S.C. § 103(a) as

being obvious over the combination of Tocker, Burger, and Kogler, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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